IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Currently Amended): A radio communication apparatus which uses a low-intermediate frequency to receive a multiband OFDM signal for hopping a center frequency at a specified band interval, said apparatus comprising:

frequency conversion means for converting the received multiband OFDM ~~a high-frequency reception~~ signal into a low-intermediate frequency signal;

AD conversion means for AD converting [[a]] the low-intermediate frequency signal into a digital signal using a specified sampling frequency to induce frequency folding in the digital signal; and

OFDM demodulation means for demodulating the digital signal into a sequence of sub-carriers ~~converting an AD-converted OFDM signal on a time axis into a sub-carrier~~ along a frequency axis so as to perform fast spectrum analysis,

wherein said OFDM demodulation means sorts, after demodulation, the [[a]] sequence of sub-carriers changed due to the frequency folding caused by [[a]] the specified sampling frequency during AD conversion ~~after performing said conversion so as to perform fast spectrum analysis~~.

Claim 2 (Currently Amended): The radio communication apparatus according to claim 1, wherein any of fast Fourier transform ~~(FFT)~~, wavelet transform, and Hartley transform is used for said demodulation ~~as said conversion~~ so as to perform fast spectrum analysis [[for]] on an OFDM signal.

Claim 3 (Original): The radio communication apparatus according to claim 1, wherein said frequency conversion means mixes a reception signal with a local signal to generate low-intermediate frequency signal.

Claim 4 (Original): The radio communication apparatus according to claim 1, wherein said frequency conversion means mixes a reception signal with a local signal having a local frequency apart from a reception frequency by half of a band interval for frequency hopping to generate a low-intermediate frequency signal composed of a low-intermediate frequency half said band interval.

Claim 5 (Original): The radio communication apparatus according to claim 1, wherein AD conversion means samples analog signals using a sampling frequency twice as high as said low-intermediate frequency.

Claim 6 (Original): The radio communication apparatus according to claim 1, wherein AD conversion means samples analog signals using a sampling frequency equivalent to a band interval for frequency hopping.

Claim 7 (Original): The radio communication apparatus according to claim 1, further comprising:

an intermediate frequency filter to remove unnecessary waves in an low-intermediate frequency signal frequency-converted by said frequency conversion means.

Claim 8 (Currently Amended): The radio communication apparatus according to claim 7, wherein said intermediate frequency filter comprises a Hilbert bandpass filter formed

by ~~using a gyrator to connect the same~~ two real filters interconnected by a gyrator, the two real filters having a same characteristic ~~with each other~~.

Claim 9 (Currently Amended): The radio communication apparatus according to claim 8, wherein [[the]] a same absolute value is used for a design frequency of a ladder-type low-pass filter as a real filter and for a center frequency of said Hilbert bandpass filer and an integer ratio is used for an element value of a ladder-type prototype filter.

Claim 10 (Original): The radio communication apparatus according to claim 8,

wherein the beginning of a reception frame includes a preamble composed of a known sequence; and

wherein there is further provided preamble detection means for detecting a preamble in a reception signal using a sequence resulting from multiplying said known preamble sequence and said low-intermediate frequency together.

Claim 11 (Currently Amended): A radio communication apparatus which uses a low-intermediate frequency to receive a multiband OFDM signal for hopping a center frequency at a specified band interval,

wherein said apparatus mixes a reception signal with a local signal having a local frequency apart from a reception frequency by half of a band interval for frequency hopping to generate a low-intermediate frequency signal composed of a low-intermediate frequency of half of said band interval, and said apparatus AD converts the low-intermediate frequency signal to generated a digital signal using a predetermined sampling frequency to induce frequency folding in the digital signal.

Claim 12 (Withdrawn): A radio communication apparatus which uses a low-intermediate frequency to transmit a multiband OFDM signal for hopping a center frequency at a specified band interval, said apparatus comprising:

OFDM modulation means for converting each sub-carrier along a frequency axis into a signal along a time axis by performing conversion reverse to spectrum analysis without changing a baseband;

low-intermediate frequency multiplication means for multiplying a low-intermediate frequency and a transmission signal after being processed by said conversion reverse to spectrum analysis together to generate an OFDM-modulated low-intermediate frequency signal;

DA conversion means for converting a low-intermediate frequency signal into an analog signal using a specified sampling frequency; and

frequency conversion means for converting a low-intermediate frequency signal into a high-frequency transmission signal.

Claim 13 (Withdrawn): The radio communication apparatus according to claim 12,

wherein any of inverse fast Fourier transform (IFFT), inverse wavelet transform, and inverse Hartley transform is used as said conversion reverse to spectrum analysis.

Claim 14 (Withdrawn): The radio communication apparatus according to claim 12, further comprising:

sub-carrier power level compensation means for correcting an aperture effect in said DA conversion means before converting a transmission signal reversely to spectrum analysis.

Claim 15 (Withdrawn): The radio communication apparatus according to claim 12, further comprising:

a complex FIR filter for correcting an aperture effect in said DA conversion means after performing conversion reverse to spectrum analysis.

Claim 16 (Withdrawn): The radio communication apparatus according to claim 12, further comprising:

wherein said frequency conversion means generates a high-frequency transmission signal by mixing a low-intermediate frequency signal with a local signal.

Claim 17 (Withdrawn): The radio communication apparatus according to claim 12,

wherein a low-intermediate frequency signal is composed of a low-intermediate frequency half a band interval for frequency hopping; and

wherein said frequency conversion means generates a high-frequency transmission signal by mixing a low-intermediate frequency signal with a local signal having a local frequency apart from a transmission frequency by half of said band interval.

Claim 18 (Withdrawn): The radio communication apparatus according to claim 12,

an intermediate frequency filter to remove unnecessary waves in an analog signal converted by said DA conversion means.

Claim 19 (Withdrawn): The radio communication apparatus according to claim 18,

wherein said intermediate frequency filter comprises a Hilbert bandpass filter formed by using a gyrator to connect the same two real filters with each other.

Claim 20 (Withdrawn): A radio communication apparatus which uses a low-intermediate frequency to transmit a multiband OFDM signal for hopping a center frequency at a specified band interval,

wherein a low-intermediate frequency signal is composed of a low-intermediate frequency half a band interval for frequency hopping; and

wherein said apparatus generates and transmits a high-frequency transmission signal by mixing a low-intermediate frequency signal with a local signal having a local frequency apart from a transmission frequency by half of said band interval.

Claim 21 (New): A radio communication apparatus which uses a low-intermediate frequency to receive a multiband OFDM signal for hopping a center frequency at a specified band interval, said apparatus comprising:

a mixer configured to convert the received multiband OFDM signal into a low-intermediate frequency signal;

an AD converter configured to convert the low-intermediate frequency signal into a digital signal using a specified sampling frequency to induce frequency folding in the digital signal; and

an OFDM demodulator configured to demodulate the digital signal into a sequence of sub-carriers along a frequency axis so as to perform fast spectrum analysis,

wherein the OFDM demodulator sorts, after demodulation, the sequence of sub-carriers changed due to the frequency folding caused by the specified sampling frequency during AD conversion.